

GKN Driveline International GmbH
Hauptstrasse 130
53797 Lohmar

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Counter track joint with optimised building space

Abstract

A constant velocity joint 11 in the form of a counter track joint with the following characteristics:

an outer joint part 12 having a first longitudinal axis A_{12} and comprising first outer ball tracks 18 and second outer ball tracks 20;

an inner joint part 15 having a second longitudinal axis A_{15} and comprising first inner ball tracks 19 and second inner ball tracks 21;

the first outer ball tracks 18 and the first inner ball tracks 19 form first pairs of tracks;

the second outer ball tracks 20 and the second inner ball tracks 21 form second pairs of tracks;

the pairs of tracks each accommodate a torque transmitting ball 17_1 , 17_2 ;

a ball cage 16 is positioned between the outer joint part 12 and the inner joint part 15 and comprises circumferentially distributed cage windows 24_1 , 24_2 which each receive at least one of the balls 17_1 , 17_2 ;

when the joint is in the aligned condition, the first pairs of tracks open in the central joint plane E in a first direction R_1 , and

when the joint is in the aligned condition, the second pairs of tracks open in the central joint plane E in a second direction R_2 ,

wherein, when the joint is in the aligned condition, the ratio V_1 of the pitch circle diameter PCDS of the shaft toothing in

the inner joint part 15 in the power of three relative to the product of the ball diameter DK squared and pitch circle diameter PCDB of the balls 17 assumes a value ranging between 0.9 and 1.3, i.e.

$$0.9 < V1 < 1.3 \text{ with } V1 = PCDS^3 / DK^2 \times PCDB).$$

Figure 1